ALEKS® Course Syllabus

Course Name:	Math 050 - Intermediate Algebra - MWF - 9:00-9:50 AM [redacted]	**Course Code:**	[redacted]
ALEKS Course:	Pre-Algebra	**Instructor:**	[redacted]
Course Dates:	[redacted] [redacted]	**Course Content:**	363 topics / 321 accessible topics

Accessible Topic - Topics accessible to visually impaired students using a screen reader.

Whole Numbers (62 topics, no due date)

Place Value, Expanded Form, and Numeral Translation (6 topics)

- Whole number place value: Problem type 1
- Whole number place value: Problem type 2
- Expanded form
- Expanded form with zeros
- Numeral translation: Problem type 1
- Numeral translation: Problem type 2

Addition and Subtraction (15 topics)

- One-digit addition with regrouping
- Addition of 3 or 4 one-digit numbers
- Adding 2-digit numbers without regrouping
- Adding a 2-digit number and a 1-digit number with regrouping
- Adding 2-digit numbers with regrouping a ten
- Adding with regrouping a hundred
- Addition of large numbers
- Subtracting a 1-digit number from a 2-digit number
- Subtraction of 2-digit numbers without regrouping
- Adding or subtracting 10, 100, or 1000
- Subtraction of 2-digit numbers with regrouping
- Subtraction with multiple regrouping steps
- Subtraction and regrouping with zeros
- Word problem with addition or subtraction of whole numbers
- Introduction to properties of addition

Multiplication and Division (23 topics)

- Multiplication as repeated addition
- One-digit multiplication
- Multiplication by 10, 100, and 1000
- Multiplying 2-digit and 1-digit numbers without regrouping
- Multiplying with regrouping
- Multiplication with trailing zeros: Problem type 1
- Introduction to multiplication of large numbers
- Multiplication with trailing zeros: Problem type 2
- Multiplication of large numbers
- Introduction to properties of multiplication
- Division facts
- Word problem with multiplication or division of whole numbers
- Word problem with multiplication and addition or subtraction of whole numbers
- Division without regrouping
- Division with regrouping
- Division with trailing zeros: Problem type 1
- Division with trailing zeros: Problem type 2
- Quotient with remainder: 1-digit divisor, 2-digit dividend
- Word problem on quotient and remainder

- Quotient with remainder: 1-digit divisor, 3-digit dividend
- Quotient with remainder: 2-digit divisor, 3-digit dividend
- Division with remainder involving quotients with intermediate zeros: Problem type 2
- Word problem with division of whole numbers and rounding: Problem type 2

Ordering, Rounding, and Estimating (9 topics)

- Even and odd numbers
- Introduction to inequalities
- Ordering large numbers
- Rounding to tens or hundreds
- Rounding to hundreds or thousands
- Rounding to thousands, ten thousands, or hundred thousands
- Estimating a sum of whole numbers: Problem type 2
- Estimating a difference of whole numbers: Problem type 2
- Estimating a product or quotient of whole numbers

Exponents and Order of Operations (9 topics)

- Writing expressions using exponents
- Introduction to exponents
- Power of 10: Positive exponent
- Introduction to parentheses
- Introduction to order of operations
- Order of operations with whole numbers
- Order of operations with whole numbers and grouping symbols
- Order of operations with whole numbers and exponents: Basic
- Understanding the distributive property

Integers (17 topics, no due date)

Plotting, Ordering, and Absolute Value (4 topics)

- Plotting integers on a number line
- Writing a signed number for a real-world situation
- Ordering integers
- Absolute value of a number

Operations with Integers (13 topics)

- Integer addition: Problem type 1
- Integer addition: Problem type 2
- Integer subtraction: Problem type 1
- Integer subtraction: Problem type 2
- Integer subtraction: Problem type 3
- Word problem with addition or subtraction of integers
- Operations with absolute value: Problem type 2
- Integer multiplication and division
- Multiplication of 3 or 4 integers
- Exponents and integers: Problem type 1
- Exponents and integers: Problem type 2
- Order of operations with integers
- Order of operations with integers and exponents

Algebraic Expressions and Equations (25 topics, no due date)

Evaluating Expressions (5 topics)

- Evaluating an algebraic expression: Whole number addition or subtraction
- Evaluating an algebraic expression: Whole number multiplication or division
- Evaluating an algebraic expression: Whole numbers with two operations
- Evaluating a linear expression: Integer multiplication with addition or subtraction
- Evaluating a quadratic expression: Integers

Distibutive Property and Combining Like Terms (7 topics)

- Distributive property: Whole number coefficients
- Distributive property: Integer coefficients
- Combining like terms: Whole number coefficients
- Combining like terms: Integer coefficients

- Using distribution and combining like terms to simplify: Univariate
- Using distribution with double negation and combining like terms to simplify: Multivariate
- Combining like terms in a quadratic expression

One-Step Linear Equations (4 topics)

- Additive property of equality with whole numbers
- Additive property of equality with integers
- Multiplicative property of equality with whole numbers
- Multiplicative property of equality with integers

Multi-Step Linear Equations (5 topics)

- Using two steps to solve an equation with whole numbers
- Additive property of equality with a negative coefficient
- Solving a two-step equation with integers
- Solving a linear equation with several occurrences of the variable: Variables on the same side and distribution
- Solving a linear equation with several occurrences of the variable: Variables on both sides and distribution

Applications (4 topics)

- Writing a one-step expression for a real-world situation
- Translating a phrase into a two-step expression
- Translating a sentence into a one-step equation
- Solving a word problem with two unknowns using a linear equation

Fractions (61 topics, no due date)

Prime Numbers, Factors, and Multiples (10 topics)

- Divisibility rules for 2, 5, and 10
- Divisibility rules for 3 and 9
- Factors
- Prime numbers
- Prime factorization
- Greatest common factor of 2 numbers
- Least common multiple of 2 numbers
- Word problem with common multiples
- Finding the next terms of an arithmetic sequence with whole numbers
- Finding the next terms of a geometric sequence with whole numbers

Equivalent Fractions (5 topics)

- Introduction to fractions
- Understanding equivalent fractions
- Equivalent fractions
- Introduction to simplifying a fraction
- Simplifying a fraction

Plotting and Ordering Fractions (5 topics)

- Fractional position on a number line
- Plotting fractions on a number line
- Ordering fractions with the same denominator
- Ordering fractions with the same numerator
- Using a common denominator to order fractions

Multiplication and Division (10 topics)

- Product of a unit fraction and a whole number
- Product of a fraction and a whole number: Problem type 1
- Introduction to fraction multiplication
- Fraction multiplication
- Signed fraction multiplication: Basic
- Signed fraction multiplication: Advanced
- Multi-step word problem involving fractions and multiplication
- The reciprocal of a number
- Division involving a whole number and a fraction
- Fraction division

Addition and Subtraction (8 topics)

- Addition or subtraction of fractions with the same denominator
- Finding the LCD of two fractions
- Addition or subtraction of unit fractions
- Introduction to addition or subtraction of fractions with different denominators
- Addition or subtraction of fractions with different denominators
- Signed fraction addition or subtraction: Basic
- Signed fraction addition or subtraction: Advanced
- Fractional part of a circle

Mixed Numbers (11 topics)

- Writing a mixed number and an improper fraction for a shaded region
- Writing an improper fraction as a mixed number
- Writing a mixed number as an improper fraction
- Plotting rational numbers on a number line
- Addition or subtraction of mixed numbers with the same denominator
- Addition of mixed numbers with the same denominator and carry
- Mixed number subtraction with the same denominator and renaming
- Addition of mixed numbers with different denominators and renaming
- Subtraction of mixed numbers with different denominators and renaming
- Mixed number multiplication
- Mixed number division

Exponents and Order of Operations (5 topics)

- Exponents and signed fractions
- Order of operations with fractions: Problem type 1
- Order of operations with fractions: Problem type 2
- Complex fraction without variables: Problem type 1
- Complex fraction without variables: Problem type 2

Equations and Applications (7 topics)

- Additive property of equality with fractions and mixed numbers
- Multiplicative property of equality with fractions
- Multiplicative property of equality with signed fractions
- Solving a two-step equation with signed fractions
- Solving a linear equation with several occurrences of the variable: Variables on both sides and fractional coefficients
- Solving a linear equation with several occurrences of the variable: Variables on both sides and two distributions
- Solving a fraction word problem using a linear equation of the form $Ax = B$

Decimals (47 topics, no due date)

Place Value, Ordering, and Rounding (6 topics)

- Writing a decimal and a fraction for a shaded region
- Decimal place value: Tenths and hundredths
- Decimal place value: Hundreds to ten thousandths
- Introduction to ordering decimals
- Ordering decimals
- Rounding decimals

Converting Decimals to Fractions (4 topics)

- Converting a decimal to a proper fraction without simplifying: Basic
- Converting a decimal to a proper fraction without simplifying: Advanced
- Converting a decimal to a proper fraction in simplest form: Advanced
- Converting a decimal to a mixed number and an improper fraction without simplifying

Addition and Subtraction (11 topics)

- Addition of aligned decimals
- Decimal addition with 3 numbers
- Subtraction of aligned decimals
- Decimal subtraction: Basic
- Decimal subtraction: Advanced
- Signed decimal addition and subtraction
- Signed decimal addition and subtraction with 3 numbers

- Estimating a decimal sum or difference
- Word problem with addition or subtraction of 2 decimals
- Word problem with addition of 3 or 4 decimals and whole numbers
- Word problem with subtraction of a whole number and a decimal: Regrouping with zeros

Multiplication (5 topics)

- Multiplying a decimal by a whole number
- Decimal multiplication: Problem type 1
- Decimal multiplication: Problem type 2
- Multiplication of a decimal by a power of ten
- Word problem with decimal addition and multiplication

Division (4 topics)

- Division of a decimal by a whole number
- Division of a decimal by a 2-digit decimal
- Division of a decimal by a power of ten
- Word problem with decimal subtraction and division

Converting Fractions to Decimals (9 topics)

- Converting a fraction with a denominator of 10 or 100 to a decimal
- Converting a fraction with a denominator of 100 or 1000 to a decimal
- Ordering fractions and decimals
- Converting a fraction to a terminating decimal: Basic
- Converting a fraction to a terminating decimal: Advanced
- Converting a fraction to a repeating decimal: Basic
- Converting a fraction to a repeating decimal: Advanced
- Converting a mixed number to a terminating decimal: Basic
- Converting a mixed number to a terminating decimal: Advanced

Equations and Applications (4 topics)

- Additive property of equality with decimals
- Multiplicative property of equality with decimals
- Solving a two-step equation with signed decimals
- Solving a decimal word problem using a linear equation of the form $Ax + B = C$

Square Roots (4 topics)

- Square root of a perfect square
- Estimating a square root
- Square root of a rational perfect square
- Simplifying the square root of a whole number less than 100

Ratios, Proportions, and Percents (22 topics, no due date)

Ratios and Rates (4 topics)

- Writing ratios for real-world situations
- Solving a word problem on proportions using a unit rate
- Solving a one-step word problem using the formula $d = rt$
- Word problem on unit rates associated with ratios of whole numbers: Decimal answers

Proportions (4 topics)

- Solving a proportion of the form $x/a = b/c$
- Word problem on proportions: Problem type 1
- Word problem on proportions: Problem type 2
- Word problem with powers of ten

Converting Between Fractions, Decimals, and Percentages (4 topics)

- Finding the percentage of a grid that is shaded
- Converting between percentages and decimals
- Converting a percentage to a fraction in simplest form
- Converting a fraction to a percentage: Denominator of 20, 25, or 50

Applications Involving Percentages (10 topics)

- Finding a percentage of a whole number without a calculator: Basic
- Applying the percent equation: Problem type 1
- Applying the percent equation: Problem type 2
- Writing a ratio as a percentage without a calculator
- Computing a percentage from a table of values
- Finding the sale price without a calculator given the original price and percent discount
- Finding the original price given the sale price and percent discount
- Finding the percentage increase or decrease: Advanced
- Finding simple interest without a calculator
- Finding the final amount in a word problem on compound interest

Geometry (53 topics, no due date)

Perimeter (5 topics)

- Perimeter of a polygon
- Perimeter of a square or a rectangle
- Sides of polygons having the same perimeter
- Finding the missing length in a figure
- Perimeter of a piecewise rectangular figure

Lines, Angles, and Triangles (14 topics)

- Identifying parallel and perpendicular lines
- Naming segments, rays, and lines
- Measuring an angle with the protractor
- Drawing an angle with the protractor
- Acute, obtuse, and right angles
- Finding supplementary and complementary angles
- Identifying supplementary and vertical angles
- Solving equations involving vertical angles
- Identifying corresponding and alternate angles
- Solving equations involving angles and a pair of parallel lines
- Acute, obtuse, and right triangles
- Classifying scalene, isosceles, and equilateral triangles by side lengths or angles
- Finding an angle measure of a triangle given two angles
- Finding an angle measure for a triangle with an extended side

Area of Polygons (12 topics)

- Area of a square or a rectangle
- Perimeter and area on a grid
- Distinguishing between the area and perimeter of a rectangle
- Areas of rectangles with the same perimeter
- Finding the side length of a rectangle given its perimeter or area
- Finding the perimeter or area of a rectangle given one of these values
- Area of a piecewise rectangular figure
- Word problem involving the area between two rectangles
- Area of a triangle
- Area involving rectangles and triangles
- Area of a parallelogram
- Area of a trapezoid

Circumference and Area of Circles (8 topics)

- Introduction to a circle: Diameter, radius, and chord
- Circumference of a circle
- Finding the radius or the diameter of a circle given its circumference
- Circumference ratios
- Perimeter involving rectangles and circles
- Circumference and area of a circle
- Area involving rectangles and circles
- Word problem involving the area between two concentric circles

Volumes (6 topics)

- Volume of a rectangular prism made of unit cubes
- Volume of a rectangular prism
- Volume of a piecewise rectangular prism
- Volume of a cylinder

- Volume of a cone
- Volume of a sphere

Surface Areas (3 topics)

- Surface area of a cube or a rectangular prism
- Surface area of a cylinder
- Surface area of a sphere

Pythagorean Theorem (1 topic)

- Pythagorean Theorem

Congruent and Similar Figures (4 topics)

- Identifying similar or congruent shapes on a grid
- Similar polygons
- Similar right triangles
- Indirect measurement

Measurement (17 topics, no due date)

U.S. Customary Units of Measurement (8 topics)

- Choosing U.S. Customary measurement units
- U.S. Customary unit conversion with whole number values
- Conversions involving measurements in feet and inches
- Adding measurements in feet and inches
- U.S. Customary unit conversion with whole number values: Two-step conversion
- U.S. Customary unit conversion with mixed number values: One-step conversion
- U.S. Customary unit conversion with mixed number values: Two-step conversion
- U.S. Customary area unit conversion with whole number values

Metric Units of Measurement (5 topics)

- Choosing metric measurement units
- Metric distance conversion with whole number values
- Metric mass or volume conversion with whole number values
- Metric distance conversion with decimal values
- Metric conversion with decimal values: Two-step problem

Time and Temperature (3 topics)

- Time unit conversion with whole number values
- Converting between temperatures in Fahrenheit and Celsius
- Solving a word problem involving rates and time conversion

Converting Between Measurement Systems (1 topic)

- Converting between metric and U.S. Customary unit systems

Statistics and Probability (16 topics, no due date)

Tables and Graphs of Data (10 topics)

- Interpreting a tally table
- Constructing a bar graph for non-numerical data
- Constructing a histogram for numerical data
- Interpreting a bar graph
- Interpreting a double bar graph
- Interpreting a pictograph table
- Interpreting a line graph
- Interpreting a circle graph or pie chart
- Computations from a circle graph
- Angle measure in a circle graph

Mean, Median, and Mode (4 topics)

- Mode of a data set
- Mean of a data set
- Mean and median of a data set

- Finding the value for a new score that will yield a given mean

Probability (2 topics)

- Introduction to the probability of an event
- Probability of an event

Graphs of Linear Equations (15 topics, no due date)

Ordered Pairs (6 topics)

- Reading a point in the coordinate plane
- Plotting a point in the coordinate plane
- Table for a linear equation
- Identifying solutions to a linear equation in two variables
- Finding a solution to a linear equation in two variables
- Writing a function rule given a table of ordered pairs: One-step rules

Graphing and Intercepts (9 topics)

- Graphing a linear equation of the form $y = mx$
- Graphing a line given its equation in slope-intercept form: Integer slope
- Graphing a line given its equation in slope-intercept form: Fractional slope
- Graphing a line given its equation in standard form
- Graphing a vertical or horizontal line
- Finding x- and y-intercepts of a line given the equation: Advanced
- Graphing a line given its x- and y-intercepts
- Graphing a line by first finding its x- and y-intercepts
- Graphing a parabola of the form $y = ax^2$

Exponents and Polynomials (28 topics, no due date)

Polynomial Addition and Subtraction (2 topics)

- Simplifying a sum or difference of two univariate polynomials
- Simplifying a sum or difference of three univariate polynomials

Product and Power Rules of Exponents (8 topics)

- Understanding the product rule of exponents
- Introduction to the product rule of exponents
- Product rule with positive exponents: Multivariate
- Understanding the power rules of exponents
- Introduction to the power of a power rule of exponents
- Introduction to the power of a product rule of exponents
- Power rules with positive exponents: Multivariate products
- Power rules with positive exponents: Multivariate quotients

Polynomial Multiplication (5 topics)

- Multiplying a univariate polynomial by a monomial with a positive coefficient
- Multiplying a multivariate polynomial by a monomial
- Multiplying binomials with leading coefficients of 1
- Squaring a binomial: Univariate
- Multiplication involving binomials and trinomials in two variables

Factoring Polynomials (5 topics)

- Introduction to the GCF of two monomials
- Greatest common factor of two multivariate monomials
- Introduction to the LCM of two monomials
- Factoring out a monomial from a polynomial: Univariate
- Factoring out a monomial from a polynomial: Multivariate

Quotient Rule and Negative Exponents (4 topics)

- Introduction to the quotient rule of exponents
- Quotient of expressions involving exponents
- Evaluating expressions with exponents of zero
- Power of 10: Negative exponent

Scientific Notation (4 topics)

- Scientific notation with positive exponent
- Scientific notation with negative exponent
- Multiplying numbers written in scientific notation: Basic
- Dividing numbers written in scientific notation: Basic